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RECENT LITERATURE.

Ameghino on the Extinct Mammalia of Argentina.[1]—We have here a monumental work, such as can only be produced under circumstances which seldom concur. The conditions are, first, rich and newly discovered fossiliferous deposits; second, a man who is competent to study and describe them; and third, facilities for publication. Such a coincidence created the Ossemens Fossiles of Cuvier in Europe; a similar state of affairs has produced corresponding works in North America; and now South America has come forward with a history and a historian worthy to take rank with anything that has gone before. The richness of the Pampean beds of Buenos Ayres has been made known to us by Owen and Burmeister, but it has been for Ameghino to bring to our notice the extraordinary wealth of the Miocene and Eocene beds of the Parana and of Patagonia. Indeed, the wealth of Patagonia, of which a few jewels were brought home by Darwin, turns out to be extraordinary, and the explorations conducted by Senor Carlos Ameghino, brother of the author of this book, have been more productive than those of any other known region, those of some parts of North America alone excepted.

The orders of Mammalia most abundantly represented are those of which examples had been already brought to light in a comparatively small number of representatives by previous explorers. The number of genera and species enumerated by M. Ameghino is as follows:

	Genera.	Species.
? Marsupialia,	8	24
Edentata,	70	188
Glires,	71	177
Bunotheria (Creodonta),	8	9
Carnivora,	13	44
Chiroptera,	11	16
Taxeopoda (Litopterna),	14	23
(Quadrumana),	4	4
Toxodontia,	28	71
Diplarthra (Perissodactyla),	7	14
(Artiodactyla,	18	46
Cetacea,	13	17
Incertæ sedis,	4	4
Proboscidia,	1	6
Total,	286	643

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[1] Contribucion al Conocimento de los Mamiferous Fosiles de la Republica Argentina, etc., por Florentino Ameghino. Tomo VI., Actos de la Academia Nacional de Ciencias de la Republica Argentina en Cordoba. Buenos Ayres, 1889. Folio, pp. 1027, with Atlas.

The most important results achieved by M. Ameghino are as follows: First, the discovery and definition of numerous marsupialoid or multituberculate forms from the Eocene of Patagonia; second, the discovery of Creodonta in the same region and horizon; third, the discovery of Edentata with enamel bands on the teeth; fourth, the definition of the suborder Litopterna, and discovery of new types; fifth, the completed definition of the order Toxodontia. To these points may be added as only second to them in importance the discovery of Eocene forms of Edentata with superior incisor teeth, and the great additions to the number of forms of Edentata, Glires, and Toxodontia.

The marsupialoid forms are of great interest. Abderites resembles the Plagiaulacidæ, while in Epanorthus we have a type which shows how the singular cutting premolar of this type or that of the Marsupialia Diprotodonta may have been derived from a primitive tuberculosectorial tooth. The occurrence of these forms in the Eocene of Patagonia is a fact of great significance, and M. Ameghino regards them as true Marsupialia, and the ancestors of the Diprotodonta of Australia.

The Creodonta mostly repose on the evidence of imperfect material. Some of them have a simple dentition, and much remains before their true affinities can be determined.

The suborder Litopterna deserves more detailed notice, and we give it in another place in the NATURALIST. It is a most interesting modification of the Condylarthra, showing variations in dental and foot structure parallel with those seen in the Perissodactyla, with which I think M. Ameghino wrongly combines them.

The light thrown on the structure of the Toxodontia is most important. The structure of the posterior feet has been hitherto but partially known, and that of the fore feet entirely unknown. M. Ameghino shows that the former are taxeopodous, and the latter amblypodous, proving conclusively the claim of the Toxodontia to be regarded as a distinct order of ungulate Mammalia. An important feature of this book is the number of new genera allied to Mesotherium which are described and figured.

The great number of Glires described is remarkable. It is interesting to observe that they correspond with existing forms of South America, the Chinchillidæ and Caviidæ being most numerous, even in Eocene times, while the Leporidæ are very few, and present only in the latest beds.

As a general result of M. Ameghino's work it is now possible to announce the following conclusions: The extinct Mammalia may be referred to three categories; first, the orders which have been mainly restricted to the Southern Hemisphere, and have originated there,—the Edentata, the Toxodonta, the Litopterna; second, cosmopolitan orders,—Glires, Chiroptera, Marsupialia, Perissodactyla; third, orders which have come from the Northern Hemisphere at a comparatively later period of geologic time,—Carnivora, Proboscidia, and Artiodactyla. The further history of the origin of the truly Antarctic types will be awaited with the greatest interest.

An atlas of 98 plates accompanies the text. The figures have been executed under the careful eye of the author, and express the characters referred to in the text. The great expense involved in their production has made it necessary to employ some phototype process, which can not give as good artistic effects as lithography.

We congratulate M. Ameghino on the completion of this great work. We also congratulate the country which has produced it. It is works of this character which give a nation its intellectual standing in the world. Henceforth Argentina will be known to science as a country which has added one of the largest and most important contributions to its temple of life.—E. D. COPE.

Furbringer's Researches on the Morphology and Systematic of Birds.[2]—This is a work of great thoroughness in the field which it covers. It is divided into two parts, each included in a volume; the first describing the anterior limb and shoulder girdle, and the second being a comprehensive review of the characters and systematic relations of birds. In the first volume the osteology, myology, and neurology are thoroughly described, and the illustrations cover the plates at the end of the second volume. The characters of many species are for the first time described and figured. In the second volume the work already done in bird anatomy is reviewed, both zoology and paleontology being thoroughly examined. The systematic results are set forth in tables. In one of these the structural characters are tabulated. In another the divisions down to families inclusive are displayed. We give this table, exclusive of the families, as exhibiting concisely the author's views. Two phylogenetic trees follow. On three succeeding plates three horizontal sections of these trees are given, which display the affinities of higher and lower forms in an expressive manner.

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[2] Untersuchungen zur Morphologie u. Systematic der Voegel; Zugl. ein Beitr. zur Anatomie der Stütz ünd Bewegungsorganen; von Max Fürbringer. Amsterdam Zj. von Halkema, 1888; 2 vols. folio, pp. 1751.